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PIZIALI, JEFFREY J				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/086,543

Applicant(s)

KOJIMA ET AL.

Examiner

Jeff Piziali

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2008 and 09 June 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 12, 13, 30 and 33 is/are pending in the application.
4a) Of the above claim(s) 1, 12 and 13 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☐ Claim(s) _____ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☒ Claim(s) 30 and 33 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/4/08
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9 June 2008 has been entered.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "*I*" (e.g., see Figure 1); "*112a*" and "*112b*" (e.g., see Figure 2b); "*102*," "*107*," "*130a*," and "*140a*" (e.g., see Figure 3).

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "*116*" has been used to designate two different switching elements in Figures 2a and 2b.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the figures.

Specification

6. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Election/Restrictions

7. Applicant's ***election with traverse of Group II (claims 30 and 33)*** in the reply filed on 24 September 2008 is acknowledged.

The traversal is on the ground (see pages 1-2 of the Election filed 24 September 2008):

The subject matter of all claims is sufficiently related that a thorough search for the subject matter of any one Group of claims would encompass a search for the subject matter of the remaining claims, as is evidenced by the previous Office Actions for the present application... Thus, it is respectfully submitted that the search and examination of the entire application could be made without serious burden, as is shown in at least the above listed Office Actions.

Respectfully, this is not found persuasive because:

Elected claims 30 and 33 are drawn to a driving device, classified in class 349, subclass 33 (*e.g., products that electrically excite liquid crystal elements*).

Non-elected claims 1, 12, and 13 are drawn to a driving method, classified in class 345, subclass 214 (*e.g., methods for controlling the condition of display elements*).

Restriction for examination purposes as indicated is proper because both these inventions listed in this action are independent or distinct for the reasons given in the Office action mailed on 3 September 2008 and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;
- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
- (d) the prior art applicable to one invention would not likely be applicable to another invention;
- (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

The traversal disputes only one of the five provided reasons for a serious search and examination burden -- leaving four of the five reasons undisputed.

A thorough search for the subject matter of any one Group of claims would not encompass a search for the subject matter of the remaining claims.

37 CFR 1.142(a) explains that a restriction requirement "*may be made at any time before final action.*" In the instant case, a Request for Continued Examination was filed on 9 June 2008. The subject matter of the claims, as amended on 9 June 2008, has not been searched or examined in any previous Office action.

The requirement is still deemed proper and is therefore made FINAL.

8. ***Claims 1, 12, and 13 are withdrawn*** from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 24 September 2008.
9. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 30 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter:

"by switching to an ON-state the liquid crystal element during a period" (line 3). For example:

It would be unclear to an artisan what relationship, if any, exists between the ***"ON-state"*** and the ***"liquid crystal element."***

An omitted structural cooperative relationship results from the claimed subject matter:

"the ON-state the liquid crystal element" (line 20). For example:

It would be unclear to an artisan what relationship, if any, exists between the ***"ON-state"*** and the ***"liquid crystal element."***

An omitted structural cooperative relationship results from the claimed subject matter:

"the ON-state a sub-field" (line 22). For example:

It would be unclear to an artisan what relationship, if any, exists between the "*ON-state*," the "*sub-field*," and the "*liquid crystal element*."

13. Claim 30 recites the limitation "*grayscale data*" (line 4). The lack of a grammatical article (such as "*a*" or "*a plurality of*" or "*the*" or "*said*") preceding the limitation renders it unclear whether the claim is establishing a new element; or instead referring back to some preestablished limitation. For example, it would be unclear to an artisan whether a single element of "*data*" is being claimed; or rather whether a plurality of "*data*" elements are being claimed.

14. Claim 30 recites the limitation "*one another*" in both lines 7 and 8. There is insufficient antecedent basis for either limitation in the claim. For example:

It would be unclear to an artisan to what each "*one another*" limitation is intended to refer.

15. The term "*substantially equal*" in claim 30 (line 13) is a relative term which renders the claim indefinite.

The term "*substantially equal*" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

It would be unclear to one having ordinary skill in the art precisely how close two different periods would need to be to one another in length before they would qualify as being "*substantially equal*."

16. Claim 30 recites the limitation "*the sub-fields*" in line 21. There is insufficient antecedent basis for either limitation in the claim. For example:

It would be unclear to an artisan to which, if any, of the earlier claimed "*sub-fields*" this limitation is intended to refer.

17. Claim 30 is amenable to two or more plausible claim constructions.

The use of the phrase "*a switching circuit*" (line 22) renders the claim indefinite.

The claimed "*switching circuit*" is amenable to two plausible definitions.

Based on the description provided in the Specification, "*a switching circuit*" could be interpreted to mean:

(a) *The thin film transistor 116 in Figure 2a (e.g., see Paragraphs 29-30).*

(b) *The complementary transistor arrangement 116 in Figure 2b (e.g., see Paragraphs 29-30).*

(c) *The decoder 312 in Figure 7 (e.g., see Paragraphs 44-49).*

(d) *The OR circuit 332 in Figure 7 (e.g., see Paragraphs 44-49).*

Thus, neither the Specification, nor the claims, nor the ordinary meanings of the words provides any guidance as to what Applicant intends to cover with this claim language.

Due to the ambiguity as to what is intended by the claimed "*switching circuit*" and the fact that this claim element is amenable to two or more plausible claim constructions, this claim is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicant considers to be the invention.

See *Ex parte Miyazaki (BPAI Precedential 19 November 2008)*.

18. Claim 33 recites the limitation "**electronic equipment**" (line 1). The lack of a grammatical article (such as "**a**" or "**a plurality of**" or "**the**" or "**said**") preceding the limitation renders it unclear whether the claim is establishing a new element; or instead referring back to some preestablished limitation.

19. Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "**a plurality of liquid crystal elements**" (claim 33, line 2); "**a liquid crystal element**" (claim 33, line 4); and "**a liquid crystal element**" (claim 30, line 1). For example:

It would be unclear to an artisan what relationship, if any, is intended to exist between each of the "**liquid crystal element(s)**" limitations.

20. The claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

As a courtesy to the Applicant, the examiner has attempted to also make rejections over prior art -- based on the examiner's best guess interpretations of the invention that the Applicant is intending to claim.

However, the indefinite nature of the claimed subject matter naturally hinders the Office's ability to search and examine the application.

Any instantly distinguishing features and subject matter that the Applicant considers to be absent from the cited prior art is more than likely a result of the indefinite nature of the claims.

The Applicant is respectfully requested to correct the indefinite nature of the claims, which should going forward result in a more precise search and examination.

Claim Rejections - 35 USC § 102 / 103

21. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. Claims 30 and 33 are rejected under 35 U.S.C. 102(e) as anticipated by *Takeuchi et al* (*US 6,483,492 B1*); or, in the alternative, under 35 U.S.C. 103(a) as obvious over *Takeuchi et al* (*US 6,483,492 B1*).

Regarding claim 30, **Takeuchi** discloses a driving device [e.g., Fig. 9; 200] of a liquid crystal element for allowing said liquid crystal element (*see the entire document, including Column 1, Line 11*) to display a level of grayscale [e.g., gradation level 1 - gradation level 16],

the liquid crystal element displays the level of grayscale (*see the entire document, including Column 2, Lines 4-27*),

throughout a frame period (e.g., *field*),

by switching to an ON-state the liquid crystal element during a period corresponding to grayscale data that defines said level of grayscale (*see the entire document, including Column 6, Lines 30-33*),

the driving device comprising:

a dividing circuit [e.g., Fig. 9; 202, 204, 206] that divides the frame period into a plurality of sub-fields [e.g., Fig. 38; *Td1-Td3*, *TD1-TD3*],

the plurality of sub-fields having a first group of sub-fields [e.g., Fig. 38; *Td1-Td3*] continuous with respect to one another and

a second group of sub-fields [e.g., Fig. 38; *TD1-TD3*] continuous with respect to one another,

the second group of sub-fields being subsequent to the first group of sub-fields,

each of the plurality of sub-fields of the first group of sub-fields having a same first sub-field period [e.g., Fig. 38; *period U(1)*] and

each of the plurality of sub-fields of the second group of sub-fields having a same second sub-field period [e.g., Fig. 38; *period U(4)*],

the second sub-field period being substantially equal to a sum of a length of the first sub-field periods (*e.g.*, *Fig. 38; Td1[U(1)] + Td2[U(1)] + Td3[U(1)]*) and a length of any one of the first sub-field periods (*e.g.*, *Fig. 38; Td1[U(1)] or Td2[U(1)] or Td3[U(1)]*) [*wherein $U(1) + U(1) + U(1) = U(4)$*];

a selecting circuit [*e.g.*, *Fig. 9; 204*] that selects,
according to the grayscale data,
sub-fields [*e.g.*, *Fig. 38; Td1-Td3 or TD1-TD3*] that are adjacent to each other in a
direction from a temporal position [*e.g.*, *Fig. 38; Td4*],

the temporal position being between the first group of sub-fields and the second group
sub-fields,

toward a sub-field [*e.g.*, *Fig. 38; Td1*] of the first group of sub-fields or a sub-field [*e.g.*,
Fig. 38; TD3] of the second group of sub-fields at a position most remote from the temporal
position; and

a driving circuit [*e.g.*, *Fig. 9; 202*] that switches to the ON-state the liquid crystal element
during a period that the sub-fields are selected (*see the entire document, including Column 21,
Line 40 - Column 22, Line 44*); and

a switching circuit [*e.g.*, *Fig. 12; 60*] that switches to the ON-state a sub-field located
between the first group of sub-fields and the second group sub-fields (*see the entire document,
including Column 23, Line 8 - Column 24, Line 8*),

regardless of the level of grayscale (*e.g.*, *wherein Takeuchi discloses the sub-field Td4
provided between the sub-fields Td1-Td3 and the sub-fields TD1-TD3 is always kept switched*

ON regardless of a level of grayscale -- from gradation level 1 - gradation level 16, sub-field Td4 is always ON),

to supply a threshold voltage relating to driving the liquid crystal element (*see the entire document, including Column 43, Lines 6-54*).

Although **Takeuchi's "Seventh Specified Embodiment"** has been relied on in detailing the above rejection, this merely serves as one example of an inventive embodiment reading on the instantly claimed invention. Other inventive embodiments of Takeuchi also read on the invention as instantly claimed -- such as, for one example, **Takeuchi's "Sixth Specified Embodiment"** (*see Fig. 37; Column 42, Line 19 - Column 43, Line 5*).

Should it be shown that **Takeuchi** neglects teaching a "switching circuit" with sufficient specificity; one having ordinary skill in the art would recognize that **Takeuchi's** driving device provides identical grayscale subframe functionality as the instantly claimed invention. Moreover, **Takeuchi** teaches using various circuits [*e.g., Figs. 9 & 12; 40, 42, 60, 202, 204, 206*] to provide such grayscale subframe functionality.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to provide a "switching circuit" that switches to the ON-state a sub-field located between the first group of sub-fields and the second group sub-fields, regardless of the level of grayscale, to supply a threshold voltage relating to driving the liquid crystal element, as instantly claimed -- so as to provide the grayscale subframe functionality via a well known and commonly understood device.

Regarding claim 33, **Takeuchi** discloses electronic equipment, comprising:
a display device [e.g., Fig. 12], including
a plurality of liquid crystal elements [e.g., Fig. 12; 14] aligned in a matrix,
that displays an image related to said electronic equipment; and
said driving device of a liquid crystal element according to Claim 30 (*see the entire document, including Figs. 9, 12, 17; Column 45, Line 54 - Column 46, Line 30*).

Response to Arguments

24. Applicant's arguments filed 9 June 2008 have been fully considered but they are not persuasive.

The Applicant contends (see Page 6 of the Response filed 9 June 2008):

In regard to the term "grayscale data," Applicants respectfully submit that no amendment is necessary because it is proper to recite the term grayscale data without use of "a" preceding the term.

However, the examiner respectfully disagrees. It would be unclear to an artisan whether a single element of "**data**" is being claimed; or rather whether a plurality of "**data**" elements are being claimed.

The Applicant contends (see Page 7 of the Response filed 9 June 2008):

The term "substantially," as recited in claims 1 and 30 is a sufficiently definite use of relatively terminology. See MPEP 2173.05(b)(D).

However, the examiner respectfully disagrees. It would be unclear to one having ordinary skill in the art precisely how close two different periods would need to be to one another in length before they would qualify as being "**substantially equal**." The instant specification does not contain sufficient guidelines of what is meant by the expression, "**substantially equal**."

For example: The instant specification states:

Each of the plurality of second sub-field periods having a length substantially equal to a length of a sum of the plurality of the first sub-field periods and one of the first sub-field periods (Paragraph 5); and

The length of the sub-fields SF5-SF7 is substantially equal to the sum of a total of the lengths of the three sub-fields SF1-SF3 and the length of one of these sub-fields (Paragraph 16).

The specification does not provide any guidance for what is meant by the claimed expression: "*the second sub-field period being substantially equal to a sum of a length of the first sub-field periods and a length of any one of the first sub-field periods*" (claim 30, line 13).

The Applicant contends (see Page 7 of the Response filed 9 June 2008):

By this Amendment, independent claims 1 and 30 are amended to recite, in part, "a switching circuit that switches to the ON-state a sub-field located between the first group of sub-fields and the second group of sub-fields, regardless of the level of grayscale, to supply a threshold voltage relating to driving the liquid crystal element." Applicants respectfully submit that the applied art reference does not disclose at least the above-recited features of independent claims 1 and 30.

However, the examiner respectfully disagrees. **Takeuchi** discloses a switching circuit [e.g., Fig. 12; 60] that switches to the ON-state a sub-field located between the first group of sub-fields and the second group sub-fields (*see the entire document, including Column 23, Line 8 - Column 24, Line 8*),

regardless of the level of grayscale (e.g., wherein Takeuchi discloses the sub-field Td4 provided between the sub-fields Td1-Td3 and the sub-fields TD1-TD3 is always kept switched ON regardless of a level of grayscale -- from gradation level 1 - gradation level 16, sub-field Td4 is always ON),

to supply a threshold voltage relating to driving the liquid crystal element (see the entire document, including Column 43, Lines 6-54).

Applicant's arguments with respect to claims 30 and 33 have been considered but are moot in view of the new ground(s) of rejection.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571)272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Piziali/
Primary Examiner, Art Unit 2629
15 December 2008